

CLAIMS

We Claim:

1. A device for preventive or therapeutic treatment of degenerative retinal disease comprising:
 - a source of an electrical stimulation signal;
 - at least one stimulating electrode, coupled to the source, configured for chronic contact with a surface structure of an eyeball; and
 - at least one return electrode, coupled to the source, configured for contact with conductive biological tissue substantially distant from the eyeball, wherein the electrical stimulation signal is applied to the eyeball via the at least one stimulating electrode and the at least one return electrode.
2. The device of claim 1, wherein the source comprises a battery.
3. The device of claim 1, wherein the source comprises an induction coil.
4. The device of claim 1, wherein the source comprises a connection to an extraocular signal source.
5. The device of claim 1, wherein the at least one stimulating electrode is configured for corneal contact.
6. The device of claim 1, wherein the at least one stimulating electrode is configured for epi-conjunctival contact.
7. The device of claim 1, wherein the at least one stimulating electrode comprises a plurality of stimulating electrodes arranged in at least one ring formation.

8. The device of claim 7, wherein the at least one ring formation is configured for application to an external surface structure of the eyeball.

9. The device of claim 7, wherein the at least one ring formation is configured for application to an internal surface structure of the eyeball.

10. The device of claim 1, wherein the at least one return electrode is configured for chronic contact with the conductive biological tissue.

11. A device for preventive or therapeutic treatment of degenerative retinal disease comprising:

a source of an electrical stimulation signal;

at least one stimulating electrode, coupled to the source, configured for chronic contact with a first surface structure of an eyeball; and

at least one return electrode, coupled to the source, configured for chronic contact with a second surface structure of the eyeball

wherein the electrical stimulation signal is applied to the eyeball via the at least one stimulating electrode and the at least one return electrode.

12. The device of claim 11, wherein the source comprises a battery.

13. The device of claim 11, wherein the source comprises an induction coil.

14. The device of claim 11, wherein the source comprises a connection to an extraocular signal source.

15. The device of claim 11, wherein the at least one stimulating electrode is configured for application to an external surface structure of the eyeball.

16. The device of claim 11, wherein the at least one stimulating electrode is configured for application to an internal surface structure of the eyeball.

17. The device of claim 11, wherein the at least one return electrode is configured for application to an external surface structure of the eyeball.

18. The device of claim 11, wherein the at least one return electrode is configured for application to an internal surface structure of the eyeball.

19. The device of claim 11, wherein the at least one stimulating electrode comprises a plurality of stimulating electrodes arranged in a ring formation.

20. The device of claim 11, wherein the at least one stimulating electrode and the at least one return electrode are arranged in at least one ring formation.

21. The device of claim 20, wherein each of the at least one stimulating electrode occupies a substantially antipodal position in the at least one ring formation relative to a corresponding one of the at least one return electrode.

22. The device of claim 20, wherein the at least one stimulating electrode and the at least one return electrode are interleaved in the at least one ring formation.

23. A method for preventive or therapeutic treatment of degenerative retinal disease, the method comprising:

chronically applying at least one stimulating electrode to a first surface structure of an eyeball;

applying at least one return electrode to conductive biological tissue substantially distant from the eyeball; and

applying an electrical stimulation signal to the eyeball via the at least one stimulating electrode and the at least one return electrode.

24. The method of claim 23, wherein chronically applying the at least one stimulating electrode further comprises chronically applying the at least one stimulating electrode to an external surface structure of the eyeball.

25. The method of claim 23, wherein chronically applying the at least one stimulating electrode further comprises chronically applying the at least one stimulating electrode to an internal surface structure of the eyeball.

26. The method of claim 23, wherein applying the at least one return electrode comprises chronically applying the at least one return electrode to the conductive biological tissue.

27. A method for preventive or therapeutic treatment of degenerative retinal disease, the method comprising:

chronically applying at least one stimulating electrode to a first surface structure of an eyeball;

chronically applying at least one return electrode to a second surface structure of the eyeball; and

applying an electrical stimulation signal to the eyeball via the at least one stimulating electrode and the at least one return electrode.

28. The method of claim 27, wherein chronically applying the at least one stimulating electrode further comprises chronically applying the at least one stimulating electrode to an external surface structure of the eyeball.

29. The method of claim 27, wherein chronically applying the at least one stimulating electrode further comprises chronically applying the at least one stimulating electrode to an internal surface structure of the eyeball.

30. The method of claim 27, wherein chronically applying the at least one return electrode further comprises chronically applying the at least one return electrode to an external surface structure of the eyeball.

31. The method of claim 27, wherein chronically applying the at least one return electrode further comprises chronically applying the at least one return electrode to an internal surface structure of the eyeball.

32. The device of claim 27, wherein chronically applying the at least one stimulating electrode comprises chronically applying a plurality of stimulating electrodes arranged in at least one ring formation.

33. The method of claim 32, wherein chronically applying the at least one return electrode further comprises chronically applying the at least one return electrode within the at least one ring formation.

34. The method of claim 33, wherein chronically applying the at least one stimulating electrode and the at least one return electrode further comprises chronically applying each of the at least one stimulating electrode at a substantially antipodal position in the at least one ring formation relative to a corresponding one of the at least one return electrode.

35. The method of claim 33, wherein chronically applying the at least one stimulating electrode and the at least one return electrode further comprises interleaving the at least one stimulating electrode and the at least one return electrode in the at least one ring formation.

36. An implantable device for use in preventive or therapeutic treatment of degenerative retinal disease comprising:

a body member configured for chronic contact with an internal surface structure of an eyeball;

at least one stimulating electrode maintained in a substantially fixed position by the body member; and

at least one return electrode maintained in a substantially fixed position by the body member.

37. The implantable device of claim 36, wherein the body member subtends an angle comprising at least a portion of a circumference of the eyeball.

38. The implantable device of claim 37, wherein the at least one stimulating electrode and the at least one return electrode are arranged in at least one ring formation.

39. The implantable device of claim 38, wherein each of the at least one stimulating electrode occupies a substantially antipodal position in the at least one ring formation relative to a corresponding one of the at least one return electrode.